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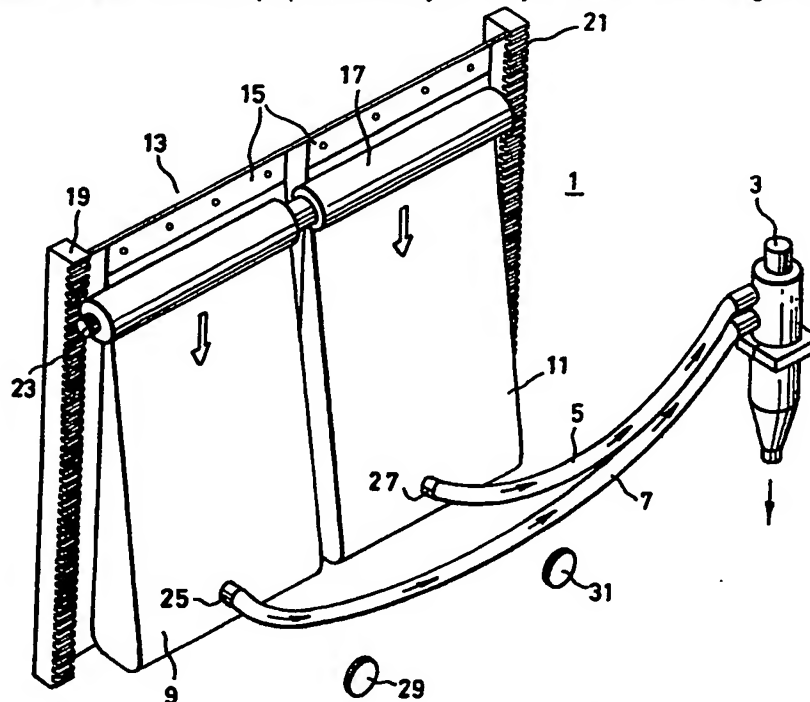
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**B8N NHAA N24A6 N24C1 N24D11 N24D7**  
**B1C CAW**  
**U1S S1367**

(56) Documents cited  
**GB 2216863 A GB 2088818 A GB 1220298 A**  
**GB 1102482 A US 4838457 A US 3782600 A**

(58) Field of search  
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INT CL<sup>5</sup> **B65D**

**(54) Dispensing system**

(57) A dispensing system 1 comprises at least two squeezable containers 9, 11 and means 17 for progressively squeezing the containers to exude their contents in controlled proportion. The system may be attached to a mixing head 3 via conduits 5, 7.



**FIG.1.**

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25 (1) of the Patents Rules 1990.

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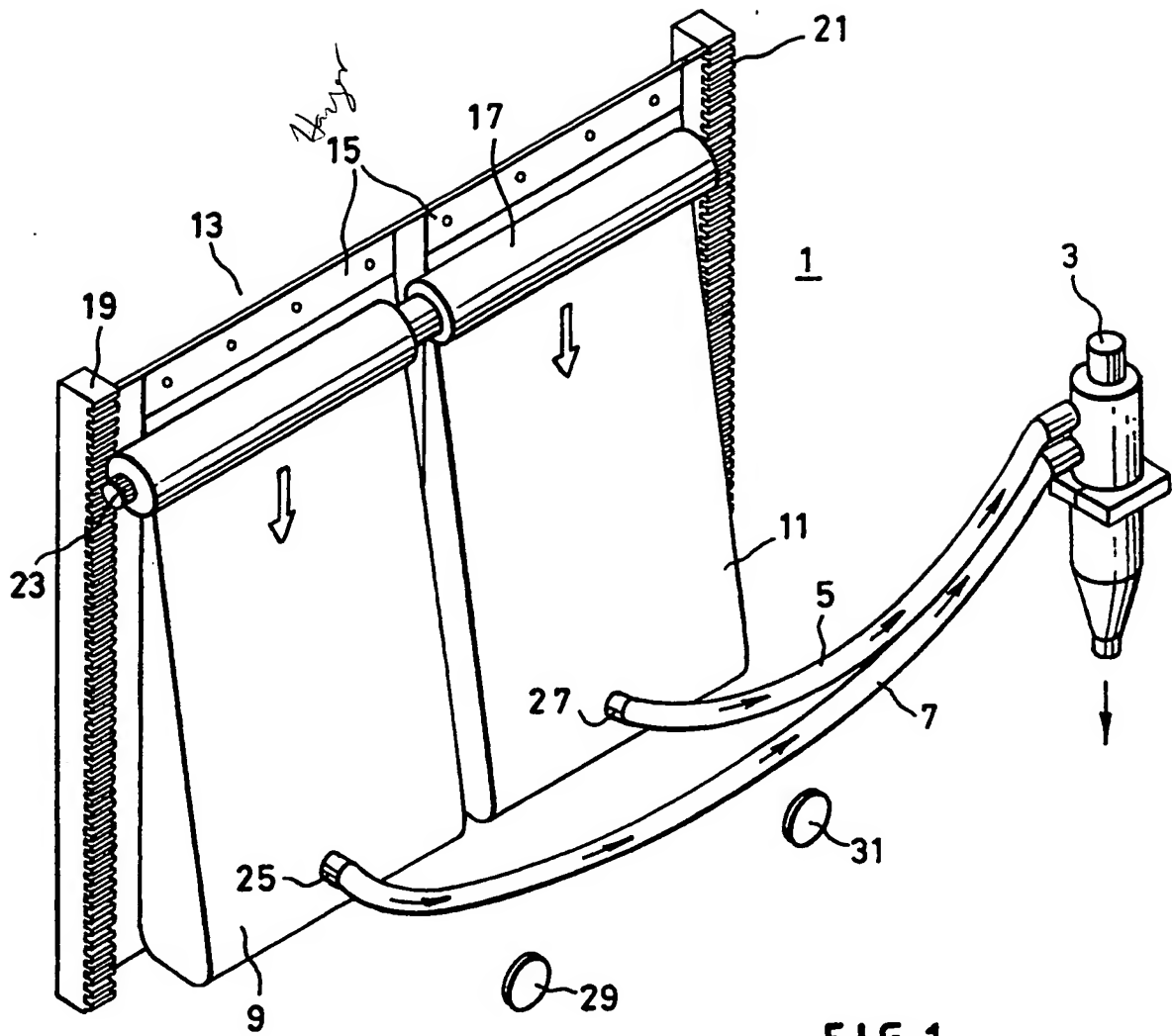


FIG.1.

## DISPENSING SYSTEM

The present invention relates to a dispensing system, particularly although not exclusively, suited to dispensing a plurality of liquids, semi-liquids or pastes which are to be mixed together before use, for example adhesives.

A common type of adhesive is that which comprises a resin and an initiator such as an epoxide, which are mixed together before use. On mixing, the initiator initiates a polymerisation reaction in the resin so that after a period, it sets and bonds the materials to which it is applied. It is therefore important that the two substances be kept apart until the time of use. It is also important to mix them in an appropriate ratio. Moreover, many such materials, particular the initiators, are highly reactive substances and are harmful on contact with the skin.

Up to now, such substances have been kept in separate containers and mixed manually, for example on a suitable surface or in a container. Clearly, manual mixing mitigates against all three of the requirements mentioned above.

The present invention overcomes these drawbacks by providing a dispensing system comprising at least two squeezable containers and means for progressively squeezing the containers to exude contents thereof in controlled proportion.

The present invention may be used for any system where it is desired to dispense substances to be mixed together. The number of containers will be equal to the number of batches of substances it is desired to dispense.

Preferably, the means for progressive squeezing of the containers is arranged to squeeze them simultaneously.

In one preferred embodiment, the squeezable containers have at least one dimension determined by the relative proportions in which it is desired to dispense their contents. Thus for example they may be generally rectangular with substantially the same length and depth but with different widths. These containers may, for example, comprise flexible bags. These bags conveniently may be fabricated from a suitable plastics material.

In the aforementioned embodiment, the means for progressive squeezing comprises a roller arranged to progressively squeeze the bags from one end. The bags

may be mounted on any suitable surface to enable this to occur. However, it is preferred to provide a suitable mounting surface, most preferably to be arranged vertically, on which the bags are mounted for use.

Advantageously, a drive mechanism is provided for the progressive squeezing means (roller). This mechanism may comprise a toothed track at either side of the mounting surface.

The present invention also extends to a mixing system comprising a dispensing system of the kind described above and a mixing head connected to the dispensing system via an appropriate number of conduits.

Conveniently, this may be arranged so that on actuating the head to exude the mixed substances, the progressive squeezing means is actuated until the head is de-activated. This may be effected by any suitable means as will be apparent to those skilled in the art, for example electrically or by means of compressed air.

The present invention will now be elaborated by the following description of a preferred embodiment and with reference to the accompanying drawing in which: -

Figure 1 shows a dispensing system according to the present invention, connected to an appropriate mixing head.

As shown in Figure 1, there is provided a dispensing system 1 attached to a mixing and dispensing head 3 by means of tubes 5, 7.

The dispensing system comprises a pair of bags 9, 11 mounted on a vertical support surface 13 by means of fastenings 15. A roller 17 is supported on toothed tracks 19, 21 which it can traverse by means of toothed spindle 23.

The bags are arranged to hang vertically. Each has a respective opening 25, 27 at the lower end thereof. Before use, these openings are sealed by plugs 29, 31. The bags contain the respective substances to be mixed.

In use, the plugs are removed and the tubes 5, 7 are connected to the respective outlets 25, 27. When it is desired to mix the contents of the bags, the mixing and dispensing head is activated. Simultaneously, a drive (not shown) causes the roller to progressively squeeze the bag in a downward direction. The contents of the bags are thereby pumped to the head where they are mixed. The width of the bags determines the proportion of mixing since the roller traverses an equal distance down the length of each bag during the operation period.

When the mixing and dispensing head is de-activated, the roller is stopped and material is no longer pumped to the head.

CLAIMS

1. A dispensing system comprising at least two squeezable containers and means for progressively squeezing the containers to exude contents thereof in controlled proportion.
2. A system according to claim 1, wherein the means for progressive squeezing of the containers is arranged to squeeze them simultaneously.
3. A system according to any preceding claim, wherein the squeezable containers have at least one dimension determined by the relative proportions in which it is desired to dispense their contents.
4. A system according to claim 3, wherein said squeezable containers are generally rectangular with substantially the same length and depth but with different widths.
5. A system according to any preceding claim, wherein the squeezable containers comprise flexible bags.
6. A system according to claim 5, wherein the bags are fabricated from a plastics material.
7. A system according to any preceding claim, wherein

the means for progressive squeezing comprises a roller arranged to progressively squeeze the bags from one end.

8. A system according to claim 7, wherein the bags are arranged on a mounting surface.

9. A system according to claim 8, wherein the mounting surface is adapted to be positioned substantially vertically when in use.

10. A system according to any preceding claim, wherein a drive mechanism is provided for the progressive squeezing means.

11. A system according to claim 10, when dependent on claim 8 or claim 9, wherein the drive mechanism comprises a toothed track at either side of the mounting surface.

12. A dispensing system substantially as hereinbefore described with reference to the accompanying drawing.

13. A mixing system comprising a dispensing system as claimed in any of claims 1-12 and a mixing head connected to the dispensing system via an appropriate number of conduits.

14. A mixing system according to claim 13, which system



is arranged so that on actuating the head to exude the mixed substances, the progressive squeezing means is actuated until the head is de-activated.

15. A mixing system substantially as hereinbefore described and with reference to the accompanying drawing.

**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

Application number

9106459.2

**Relevant Technical fields**

- (i) UK Cl (Edition K ) B1C, CAW;  
 B8D, DFE, DCE; B8N, HAA, HAB,  
 D, HAC, HCZ, B  
 (ii) Int Cl (Edition 5 ) B65D

Search Examiner

R E PHAROAH

**Databases (see over)**

(i) UK Patent Office

(ii)

Date of Search

8 JULY 1992

Documents considered relevant following a search in respect of claims

1-15

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB A 2216863 (M SHARIFF)	1
X	GB A 2088818 (H SERRALLONGA)	1
X Y	GB 1220298 (SARJACKS)	1 7,8,9,10, 11
X	GB 1102482 (H V HARDMAN) see page 4, lines 87-104	1-8, 10, 13
X	US 4838457 (J C SWAHL) see column 4 lines 9-25	1,2,3,5, 6,13
X Y	US 3782600 (P S COLUMBUS) see column 6, lines 38-42, column 7, lines 1-8	1,2,3,4, 5,6,13 7,8,9, 10,11
	The above citations are examples of a number of documents considered relevant	

Category	Identity of document and relevant passages	Relevant to claim(s)

#### Categories of documents

**X:** Document indicating lack of novelty or of inventive step.

**Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.

**A:** Document indicating technological background and/or state of the art.

**P:** Document published on or after the declared priority date but before the filing date of the present application.

**E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.

**&:** Member of the same patent family, corresponding document.

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